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OBSERVATIONS ON THE ROOSTING AND FEEDING HABITS OF PIPISTRELLE BATS AROUND CALCUTTA AIRPORT

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ABSTRACT

Some interesting observations on the roosting and feeding habits of *Pipistrellus coromandra* and *Pipistrellus mimus* have been discussed. It was observed that *P. mimus* emerges from the roost for feeding slightly earlier than *P. coromandra* and there is a definite co-relation between the time of emergence of these bats and the sunset time.

Very little is known on the different habits of the Indian Pipistrelle, *Pipistrellus coromandra* (Gray) and the Indian Pygmy Pipistrelle, *Pipistrellus mimus* Wroughton, except for some stray informations on the subject by Phillips (1922), Brosset (1962), Khajuria (1980), etc. The author, however, had the opportunity of making some interesting observations on the roosting and feeding habits of these two bats at the Calcutta Airport, during 1977-1980, which are recorded here.

The study on the roosting and feeding habits of the two species was conducted on 25 roosting sites of which 15 were of *P. coromandra* and 10 were of *P. mimus*. In addition, a common roost for both the species, with a single entrance, was also recorded, where they were found to live in separate groups in different areas. During this study, in each of the 15 roosting sites, *P. coromandra* was found to congregate in selected areas between the wall and the upper corrugated tin shed, above a false ceiling made of masonite board. *Pipistrellus mimus*, on the contrary, preferred the space between the wall and the different sign boards fixed over it. The common roosting site of the mixed colony, however, was observed to be in the same area as inhabited by *P. coromandra*. The height of the roosts above the ground varied from 6 to 9 m in the case of *P coromandra* and from 3 to 6 m for *P mimus*. The diameter of the entrance hole in the roost of *P. coromandra* varied from 4 to 6 cm as against 3 to 5 cm in that of *P mimus*. The number of individuals inhabiting a roost varied from eight to 25 (mean 18) for *P. coromandra* and six to 20 (mean 15) for *P mimus*.

Observations were made on the daily activity pattern of these bats. In the roosts, the bats were found to be inactive during the diurnal hours, but their entire colonies showed signs of activity about 20 minutes before their emergence at dusk. While emerging, the muzzle of the bat is first seen through the entrance/exit hole. It pauses in this position probably for sensing the outside environment through their smell or echolocation or both. If everything is found satisfactory, one of the bats (the 'pilot bat') comes out of the hole head first. Its wrists are then seen alongside the head. Finally it heaves its body through the narrow hole by extending its elbow joint, an instant

later it is in flight. After one or two rounds of flight the 'pilot bat' comes back to the roost again. Then the entire colony come out of the roost one after another at an interval of a minute or so. Depending on the size of the colony it takes 20 to 30 minutes for all the bats to come out of their roost for feeding. Before entering the roost it makes more than one approach, each time just touching the hole and again flying back. Finally, it inserts its head through the hole by closing the wings and then quickly crawls in. The entire process of emergence and entrance are, however, extremely rapid.

The time of emergence of these two species of bats varied according to the season. The time of sunset and sunrise have also been observed to have some relation on the times of their emergence and return to roost. It is observed that the emergence time in *P. mimus* is slightly earlier than *P. coromandra* (Table 1 and Fig. 1).

On several occasions it was observed that with the landing and take-off sounds of the heavy aircraft, these bats get disturbed in their roost and start climbing upward and sideward while the similar sounds of the small aircraft showed no effect at all. They

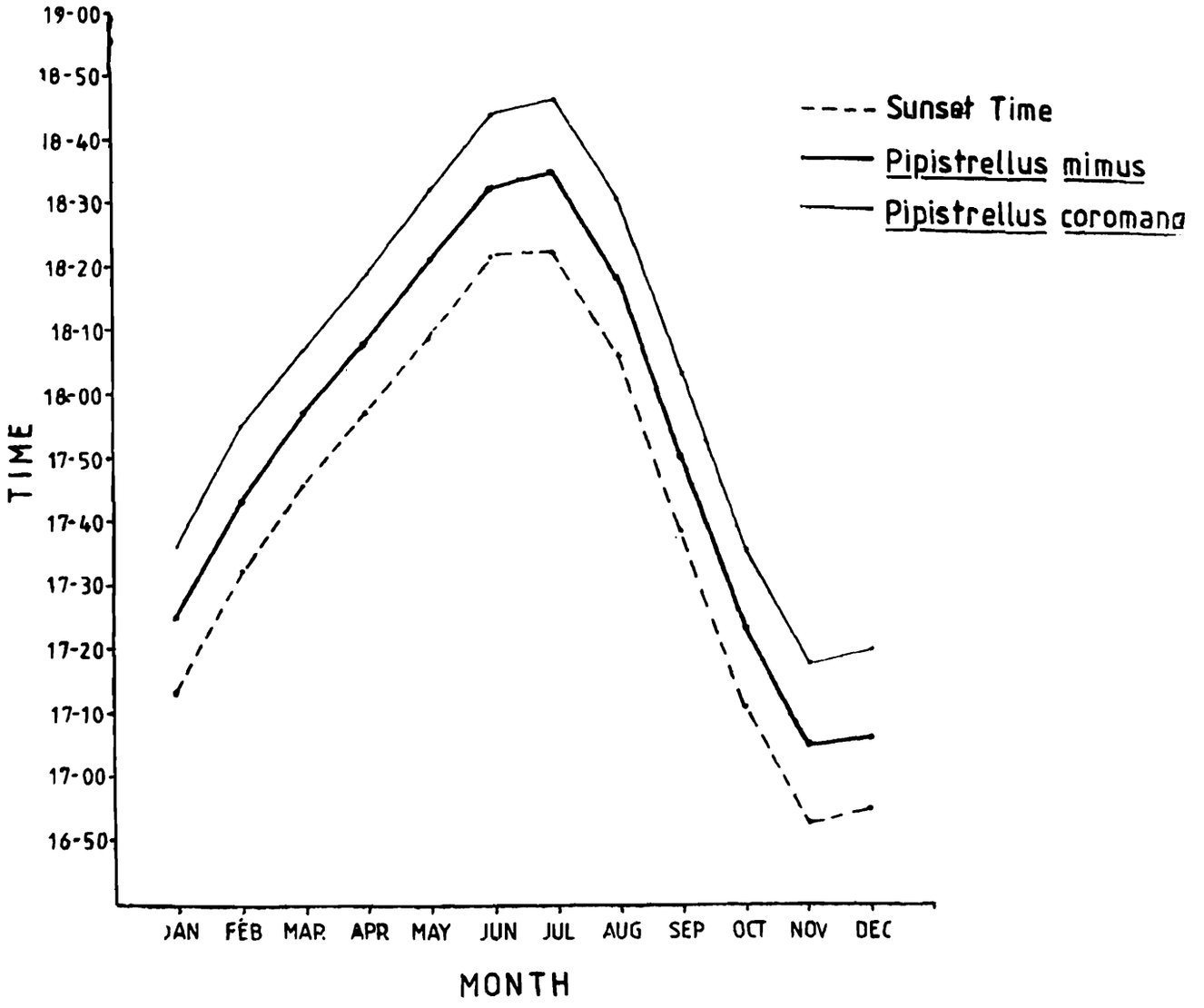

Fig. 1. Time of emergence of *Pipistrellus mimus* and *Pipistrellus coromandra* in relation to sunset time.

TABLE 1. Time of emergence of *Pipistrellus mimus* and *Pipistrellus coromandra* and the sunset-time (mean in parenthesis) around Calcutta Airport during the year 1978.

Month	Sunset Time	*Pipistrellus mimus*	*Pipistrellus coromandra*
January	17-03 to 17-24 (17-13)	17-15 to 17-35 (17-25)	17-25 to 17-47 (17-36)
February	17-24 to 17-39 (17-32)	17-35 to 17-50 (17-43)	17-47 to 18-00 (17-55)
March	17-40 to 17-51 (17-46)	17-52 to 18-02 (17-57)	18-02 to 18-12 (18-07)
April	17-51 to 18-02 (17-57)	18-03 to 18-14 (18-08)	18-13 to 18-25 (18-19)
May	18-03 to 18-16 (18-09)	18-15 to 18-28 (18-21)	18-26 to 18-38 (18-32)
June	18-17 to 18-25 (18-22)	18-29 to 18-38 (18-33)	18-39 to 18-50 (18-45)
July	18-18 to 18-25 (18-23)	18-30 to 18-38 (18-35)	18-43 to 18-50 (18-47)
August	17-55 to 18-18 (18-07)	18-07 to 18-29 (18-19)	18-20 to 18-43 (18-32)
September	17-25 to 17-54 (17-39)	17-37 to 18-06 (17-51)	17-50 to 18-19 (18-04)
October	17-00 to 17-24 (17-11)	17-12 to 17-35 (17-23)	17-25 to 17-49 (17-36)
November	16-51 to 16-59 (16-53)	17-03 to 17-11 (17-05)	17-16 to 17-25 (17-18)
December	16-51 to 17-02 (16-55)	17-02 to 17-14 (17-06)	17-16 to 17-27 (17-20)

again come to rest after a few minutes. The sound of heavy aircraft also cause disturbance in their emergence and entrance causing delay in the process by about 10 to 15 minutes. During the period of the observation, however, it was observed twice that a few bats came out of their roost during the day time for a short time, being disturbed by the sound of said aircraft.

In the study area both the species of bats were found together to feed on insects in front of the high power spotlight in front of hangers. It was observed that *P. coromandra* preferred a higher elevation for their feeding than that of *P. mimus* which even came down gliding to about one metre above the ground. Bats of both the species feeding near the runway were found to leave the area when disturbed by the sound of the heavy aircraft during take-off and landing. These bats were found in their feeding flights for about ninety minutes or so. Then they went back to their roost. After some rest of about 20 to 30 minutes they again came out for feeding. This process continued throughout the night and they finally returned to their roost roughly an hour before dawn. During winter season they did not feed throughout the night. They were found to return to their roost before midnight, probably due to the numbing effect of the low outside temperature. On some nights when the atmosphere was more chilly, these bats did not come out of their roost at all for feeding. It was also observed that different populations of these bats had their own feeding territory and found chasing out any intruder of other population.

Inside the roost both the species were found not to hang with their head downwards as in other bats, but attach themselves on the hard surface on all fours, with their head upward. In winter it was found that they roost very close to each other and sometimes one above the other. When disturbed they were found to be good runners and ran on all fours in all directions, *viz.*, backwards, sidewards and downwards.

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